FPL.

L-2013-127
10 CFR § 50.73

APR 11 2013

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555-0001

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2013-002-00
Automatic Reactor Trip due to Low Condenser Vacuum

The attached Licensee Event Report 05000250/2013-002-00 is submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A) due to valid actuations of the Reactor Protection and Auxiliary Feedwater Systems.

If there are any questions, please call Mr. Robert J. Tomonto at 305-246-7327.

Very truly yours,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resourse@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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4. TITLE

Automatic Reactor Trip due to Low Condenser Vacuum

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
2	11	2013	2013	- 002 -	00	4	11	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

Mode 1

10. POWER LEVEL

99

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☒ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)0	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Paul F. Czaya	305-246-7150

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On February 11, 2013, a turbine gland sealing steam spillover valve was being bypassed in preparation for calibration of the actuator. Opening the bypass valve created a flow path for gland steam to the condenser, which caused a reduction in gland sealing steam pressure and decrease in main condenser vacuum. Main condenser vacuum reached the turbine trip setpoint, which caused an automatic reactor trip. The Auxiliary Feedwater (AFW) System actuated automatically due to low steam generator (SG) levels following the reactor trip. Recovery from the reactor trip was uncomplicated. AFW was secured and main feedwater was used for SG water level control. Decay heat removal was to atmosphere via the steam dump valves.

The root cause was determined to be ineffective implementation of the operational standards as demonstrated by: 1) improper monitoring of plant parameters during the manipulation of the spillover bypass valve, and 2) utilizing an equipment clearance order in lieu of an operating procedure when bypassing the gland seal spillover valve. Corrective actions include: 1) Revise procedural guidance for bypassing spillover valves, and 2) Implement an improvement plan to reinforce operational standards.

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NARRATIVE

DESCRIPTION OF THE EVENT

On February 11, 2013, a field operator was sent to place a clearance on the Unit 3 Turbine Gland Seal System spillover valve [TC, PCV], CV-3-3725, in preparation for calibration of the actuator. The clearance called for throttling open the normally closed Unit 3 gland steam spillover bypass isolation valve [TC, ISV] 3-90-005, then closing the inlet and outlet spillover isolation valves. The throttling of the bypass valve was left to the skill of the craft, with the only requirement being to set header pressure in a band of 3.5 – 5 psig prior to isolating the spillover valve.

While executing the clearance, at approximately 2332 the field operator opened the spillover bypass valve 3-90-005 approximately 50 to 60% open creating a flow path for gland steam to the condenser [SB, COND]. Pressure in the gland steam header was lost and air entered the low pressure turbines [TA, TRB] through the gland seals [TC, SEAL]. Vacuum in the condenser began to lower and within approximately 5 minutes the condenser low vacuum turbine trip setpoint (22 inches Hg) was reached tripping the turbine, which resulted in a reactor [AC, RCT] trip.

All control rods fully inserted. The Auxiliary Feedwater (AFW) System [BA] actuated automatically based on low steam generator (SG) [SB, SG] levels following the trip. SG levels then returned to normal. AFW was secured and main feedwater [SJ] was used for SG water level control. Decay heat removal was to atmosphere via the atmospheric steam dump valves [KE, TCV]. Recovery from the reactor trip was uncomplicated.

The NRC Operations Center was notified by Event Notification 48744 at approximately 0045 on February 12, 2013 in accordance with 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A).

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as "...any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section." The Reactor Protection System [JC] and AFW System automatically actuated during the event and are included in the systems listed in paragraph (a)(2)(iv)(B).

CAUSE OF THE EVENT

The root cause was determined to be ineffective implementation of the operational standards as demonstrated by:

- Improper monitoring of plant parameters during the manipulation of the spillover bypass valve.
- Utilizing an equipment clearance order in lieu of an operating procedure when bypassing the gland seal spillover valve.

The contributing cause was:

Poor execution of the work order screening process led to not identifying that degradation of PT-3-3417, gland steam system header pressure transmitter, was a Control Room deficiency.

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BACKGROUND INFORMATION

The turbine gland sealing system prevents steam leakage out of the turbine and air leakage into the turbine at the rotor glands. If steam seal header pressure builds up to 5.5 psig, the gland steam spillover valve, CV-3-3725, opens to spill excess steam to the condenser. At lower loads and during startup, sealing steam is supplied by the main steam header to the gland seal regulator, CV-3-3724. The regulator maintains the seal steam pressure at 3 to 5 psig as sensed by the gland seal steam pressure controller (PC-3708) [TC, PCO]. The turbine gland seal low pressure alarm E 5/5 will annunciate in the Control Room [NA] if the supply pressure decreases to 2 psig. Manual bypass valves are provided in parallel with CV-3-3724 and CV-3-3725. Gland steam pressure is indicated locally by a pressure indicator and in the Control Room (PI-3-1611). Overpressure protection is provided by a relief valve [TC, RV] set for 25 psig and a rupture disk [TC, RPD] set for 100 psig.

ANALYSIS OF EVENT

Gland seal steam was incorrectly considered to have little potential impact to plant availability. Operators accepted informal guidance to bypass the spillover valve with a clearance. The risk of a unit trip due to loss of condenser vacuum when bypassing the spillover valve was not considered as a worst possible consequence. It was the wrong standard to perform the evolution via a clearance without adequate guidance for bypassing the spillover valve. Procedure guidance for the evolution did not exist. As a result, the pressure band selected for local control of gland seal header pressure was incorrect, leading to throttling open the spillover bypass valve to the extent that condenser vacuum decreased to the turbine trip setpoint.

Control Room indicator PI-3-1611 [NA, PIC], gland steam header pressure, and Control Room alarm E 5/5 [NA, PA] (turbine gland seal low pressure set at 2 psig) were not available during the clearance evolution. The pressure indicator and alarm receive input from PT-3-3417. If the E 5/5 alarm had come in, operators would have identified the source of air inleakage before indication of loss of vacuum.

ANALYSIS OF SAFETY SIGNIFICANCE

Decreasing condenser vacuum caused a turbine trip which resulted in the automatic reactor trip. Plant response to the decrease in condenser vacuum and reactor trip was as expected. As a result, the safety significance of the event is considered low.

CORRECTIVE ACTIONS

Corrective actions are documented in AR 1847369 and include the following:

1. Revise plant procedure 3/4-NOP-089.01, Turbine Gland Seals and High Pressure Cylinder Heating, to include guidance for bypassing spillover valves.

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2. Implement an improvement plan to reinforce operational standards.
3. Perform a review of bypass valves of control valves in the gland seal and cylinder heating systems that do not have existing procedural guidance for being placed in-service, and develop procedural guidance to control this action.
4. Brief appropriate Operations personnel on proper identification of Control Room deficiencies during screening of work orders.

FAILED COMPONENTS IDENTIFIED: None

PREVIOUS SIMILAR EVENTS: None